

Maryland Department of the Environment
National Pollutant Discharge Elimination System (NPDES)
Municipal Separate Storm Sewer System (MS4)

Permit Number 11-DP-3310 (MD0068268)



Barry Glassman
County Executive

Harford County, Maryland
Department of Public Works
Watershed Protection and Restoration Office

2015 Annual MS4 Report

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Introduction

The Clean Water Act adopted in 1972, established the National Pollutant Discharge Elimination System program, or NPDES for industrial facilities that discharge process wastewater to receiving streams or groundwater. Before discharging process wastewater, the industrial facility must apply for and receive an NPDES permit.

The 1987 Clean Water Act amendments updated the NPDES regulations to include discharge from stormdrain pipes, or Municipal Separate Storm Sewer Systems (MS4). Jurisdictions nationwide with populations over 100,000 were required to submit a two-phase application for an individual five-year NPDES MS4 permit.

In Maryland, the Maryland Department of the Environment (MDE) has been delegated the program by the U.S. Environmental Protection Agency (EPA). Harford County received its first permit on May 17, 1994 and reissued permits on August 13, 1999, November 1, 2004 and December 30, 2014.

As established in the MS4 permit, annual reports are due on the anniversary of the effective date of the permit. The information contained in the annual reports document activities completed towards meeting the requirements of the permit.

This document is the first annual report since the issuance of Harford County's MS4 permit on December 30, 2014. The current permit requires annual reports to be submitted for the fiscal year (July 1 through June 30). The previous permit required annual reporting on the calendar year.

The calendar year 2014 annual report documents activities completed during the first half of fiscal year 2015, or July 2014 through December 2014. Therefore, the reporting period for this annual report is January through June 2015. Future reports will document activities for the full fiscal year.

The language from the permit is repeated in this annual report to compare each permit requirement with the activities completed to address the requirement. The permit language is shown within gray text boxes. The remaining text is Harford County's response to each permit requirement.

MARYLAND DEPARTMENT OF THE ENVIRONMENT
NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM
MUNICIPAL SEPARATE STORM SEWER SYSTEM DISCHARGE PERMIT

PART I. IDENTIFICATION

A. Permit Number 11-DP-3310 (MD0068268)

B. Permit Area

This permit covers Stormwater discharges to and from the municipal separate storm sewer system owned and operated by Harford County, Maryland.

C. Effective Date December 30, 2014

D. Expiration Date December 29, 2019

PART II. DEFINITIONS

Terms used in this permit are defined in relevant chapters of Title 40 of the Code of Federal Regulations (CFR) Parts 122-124 or the Code of Maryland Regulations (COMAR) 26.08.01. Terms not defined in CFR or COMAR shall have the meanings attributed by common use.

PART III. WATER QUALITY

The permittee must manage, implement, and enforce a Stormwater management program (SWMP) in accordance with the Clean Water Act (CWA) and corresponding Stormwater National Pollutant Discharge Elimination System (NPDES) regulations, 40 CFR Part 122, to meet the following requirements:

1. Effectively prohibit pollutants in Stormwater discharges or other unauthorized discharges into the MS4 as necessary to comply with Maryland's receiving water quality standards;
2. Attain applicable wasteload allocations (WLAs) for each established or approved Total Maximum Daily Load (TMDL) for each receiving water body, consistent with Title 33 of the U.S. Code (USC) §1342(p)(3)(B)(iii); 40 CFR §122.44(k)(2) and (3); and

3. Comply with all other provisions and requirements contained in this permit, and in plans and schedules developed in fulfillment of this permit.

Compliance with all conditions contained in PART's IV through VII of this permit shall constitute compliance with §402(p)(3)(B)(iii) of the CWA and adequate progress toward compliance with Maryland's receiving water quality standards and any EPA approved Stormwater WLAs for this permit term.

Harford County recognizes the need to improve water quality in the Chesapeake Bay and local Harford County streams. We also recognize through the MS4 permitting program, the responsibility of local governments to participate in the restoration of our waters.

Harford County, however, has reiterated throughout the permit issuance process, that the permit requirements listed herein exceed Harford County's maximum extent practicable (MEP), considering both limited financial capabilities and short timeframes for implementation. MEP is the legal compliance standard for MS4s established by the Clean Water Act. Additionally, although Part I.B. of the permit correctly defines the MS4 Permit Area, outside of the permit MDE expressed a more expansive interpretation of the regulated permit area.

The County expressly reserves its rights to reduce the acreage associated with the impervious surface area assessment in Part IV.E.2.a of the permit, which in turn impacts the County's restoration efforts during this permit term under Part IV.E.2.a, to the minimum acreage required by the permit. The County expressly reserves its rights to make refinements to its assessment as necessary in the future based upon new or additional information consistent with an adaptive management approach.

Part IV. STANDARD PERMIT CONDITIONS

A. Permit Administration

Harford County shall designate an individual to act as a liaison with the Maryland Department of Environment (MDE) for the implementation of this permit. The County shall provide the coordinator's name, title, address, phone number and email address. Additionally, the County shall, in its annual report, submit to MDE an organizational chart detailing personnel and groups responsible for major NPDES program tasks in this permit. MDE shall be notified of any changes in personnel or organization relative to NPDES program tasks.

With the issuance of this permit, Harford County has increased both staff and financial capacity for the implementation of the MS4 program. In order to accelerate permit requirements, Harford County continues to utilize and expand the use of open-end contracts.

The MS4 program is administered through the Department of Public Works, Office of Watershed Restoration and Protection, here forward called the Harford County MS4 Office (listed below) with support from other departments throughout the county government (Appendix A). Additionally, Harford County utilizes various partnerships with outside agencies to accomplish permit requirements.

During this reporting period, program capacity has been increased. Two capital project managers from Highways Engineering also began managing watershed restoration projects. A public outreach coordinator position was established, and a new design-build open-end contract was issued.

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Office of Watershed Restoration and Protection
212 South Bond Street
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(410) 638-4109

Timothy Whittie, P.E. (Director, Public Works), (410) 638-3285
Scott Kearby (Deputy Director, Construction Management), extension 1252

Christine Buckley, P.E. (MS4 Program Manager, **primary liaison**) extension 1176

Betsy Collins (MS4 Capital Projects Manager, **alternate liaison**), extension 1394

Michele Dobson (MS4 Monitoring Manager), extension 1247

Vacancy (MS4 Outreach Coordinator), extension 2448

B. Legal Authority

Harford County shall maintain adequate legal authority in accordance with NDPES regulations 40 CFR Part 122.26 throughout the term of this permit. In the event that any provisions of its legal authority is found to be invalid, the County shall notify MDE within 30 days and make the necessary changes to maintain adequate legal authority. All changes shall be included in the County's annual report.

Harford County Code Chapter 214 and Chapter 109 provide adequate legal authority for the implementation of this permit.

During this reporting period, Harford County adopted two bills and one resolution related to the implementation of Chapter 214.

Bill 14-036 (1/26/2015) Repeal – Stormwater Remediation Fee

This bill repeals in its entirety

Bill 13-012 (4/16/2013) – Stormwater Remediation Fee

Resolution 005-15 (3/3/2015) Recordation Tax Reallocation

This resolution dedicates a portion of the recordation tax towards the Watershed Restoration and Protection Program for the implementation of this permit.

Bill 15-008 (4/22/2015) Stormwater Performance Bond

This bill allows for the issuance of use and occupancy for single lots where weather and/or environmental conditions delay the completion of the stormwater management. A cash bond must be posted before the use and occupancy is issued.

Copies of the bills and resolution are enclosed in Appendix B.

C. Source Identification

Sources of pollutants in stormwater runoff countywide shall be identified and linked to specific water quality impacts on a watershed basis. The source identification process shall be used to develop watershed restoration plans. The following information shall be submitted annually for all County watersheds within the permit area in geographic information system (GIS) format with associated table as required in PART V of this permit.

In March 2015, MDE finalized the *MS4 Geodatabase Design and User's Guide*. This geodatabase structure is very robust with multiple relational tables. Migration of existing data into this format will be labor intensive. The Harford County MS4 Office's preliminary review of the structure has identified instances of redundant data, unclear links between tables, and uncertainty of the data usage.

The Harford County MS4 Office requests work sessions with all of the Phase 1 MS4 jurisdictions to test the structure with actual data prior to full implementation.

Data for the following tables and features classes has been submitted for this reporting period along with questions and comments as applicable:

MDE New Database
Permit Administration
Outfall
Outfall Drainage Area
BMPPOI
BMP
BMP Drainage Area
SWM Management Programs
Erosion Sediment Control
Quarterly Grading Permits
Quarterly Grading Permit Information

1. Storm drain system: all infrastructures, major outfalls, inlets and associated drainage areas delineated;

Stormdrains

New stormdrains were installed associated with the 3.29 miles of roadway accepted by Harford County during this reporting period.

All stormdrain features, including point features (i.e. outfalls, manholes, inlets, etc.), stormdrain pipes, and stormdrain drainage areas were entered into the geodatabase Stormdrains.mdb.

The locations for the point features were input into the geodatabase by georeferencing stormdrain design drawings. Associated attributes for the point features were also entered.

Point Features - 238

Outfalls (Closed Systems) - 17

Outfalls (Culverts) – 5

Outfalls (SWM Facilities) - 1

Outfalls (Water Quality) - 3

Inlets - 117

Manholes - 95

Using the point features, lines for the stormdrain pipe were added to the geodatabase and the associated attributes were entered.

Drainage Areas

There were three major outfalls (36" or larger in diameter for non-industrial and 12" or larger for industrial) for roads accepted during this reporting period. The boundaries of the drainage areas were delineated by georeferencing stormdrain drainage area drawings. Drainage areas for the three major outfalls were delineated.

A map of the outfalls and table of attributes are included in Appendix C1. The spatial and tabular data for the outfall locations (Outfall point feature class) and outfall drainage areas (OutfallDrainageArea polygon feature class) were input into MDE's new geodatabase. An

electronic copy of the geodatabase, Stormdrains.mdb, and MDE's new geodatabase were submitted with this report.

2. Industrial and commercial sources: industrial and commercial land uses and sites that the County has determined have the potential to contribute significant pollutants;

The Harford County MS4 Office maintains a map of the businesses that are inspected under the illicit discharge detection and elimination program. The selection of the businesses is based on locations within commercial and/or industrial parks and parcels with an industrial or commercial landuse.

3. Urban best management practices (BMPs): stormwater management facility data including outfall locations and delineated drainage areas;

Stormwater Management Facilities

During this reporting period, 87 stormwater management practices were as-built:

Stormwater Management (New Development) - 77

Structural Best Management Practices (BMPs) - 15

Environmental Site Design (ESD) BMPs - 62

Alternative BMPs - 0

Stormwater Management (Redevelopment) - 10

Structural Best Management Practices (BMPs) - 0

Environmental Site Design (ESD) BMPs - 6

Alternative BMPs - 4

Stormwater Management Drainage Areas

The drainage areas for each of the 87 stormwater management practices were delineated.

A map of the stormwater locations and table of attributes are included in Appendix C3. The spatial and tabular data for the points of interest (BMPPOI point feature class), BMP drainage areas (BMPDrainageArea polygon feature class), and BMP tabular data (BMP table) were input into MDE's new geodatabase. An electronic copy of the geodatabase was submitted with this report.

MDE New GeoDatabase

This data should be considered preliminary. A clear understanding of the geodatabase structure is necessary in order to input the data correctly. The Harford County MS4 Office has questions concerning the organization and redundancy of the data. The following are a few of the questions:

Dates – It is unclear why the permit approval date and built date are within the BMPPOI. It is possible that additional ESDs are constructed later for restoration or site expansion. Therefore it seems more appropriate for these dates to be located within the BMP table. Since there is already a built date in the BMP table, the Harford County MS4 Office recommends deleting the built date in the BMPPOI and moving the approval date to the BMP table.

Links between BMP feature classes and BMP table – The relationship between the BMPPOI and the BMP table is one to many, as each point of interest can have multiple BMP classes and multiple BMP types draining to a single point of interest. A BMP drainage is required for each BMP creating a one to one relationship. There is no one to one relationship between BMPPOI and the BMP drainage. The links between these three is unclear and appears to contain multiple overlapping links.

Stormwater Management Waivers, Exemptions, and Fees in Lieu

During this reporting period, six projects were not required to provide stormwater management.

Stormwater Management- 6

Waivers – 4

Exemptions – 1

Fees in Lieu – 1

A map of the waivers, exemptions and fees in lieu and table of attributes are included in Appendix C3. The totals for each were entered into MDE's new geodatabase, SWM table. An electronic copy of the geodatabase was submitted with this report.

4. Impervious surfaces: public and private land use delineated, controlled and uncontrolled impervious areas based on, at a minimum, Maryland's hierarchical eight-digit sub-basins;

During this reporting period, the 2000 impervious surfaces owned by Harford County were identified, based on the best available data for the 2000 aerial photography. This data will continue to be updated and refined as necessary to adequately represent the impervious surfaces:

Impervious Surfaces Ownership within Harford County – 11,590 acres

Harford County Roads – 2,900 acres
Harford County Other – 140 acres
Harford County Schools – 220 acres
Harford Community College – 30 acres
Private – 8,300 acres

Impervious Surfaces within Harford County – 11,590 acres

02120201 (Lower Susquehanna River) – 250
02120202 (Deer Creek) - 2400
02120204 (Conowingo Dam) - 210
02120205 (Broad Creek) - 700
02130701 (Bush River) - 1600
02130702 (Lower Winters Run) - 980
02130703 (Atkisson Reservoir) - 1900
02130704 (Bynum Run) - 1600
02130705 (Aberdeen Proving Ground) - 10
02130706 (Swan Creek) - 430
02130801 (Gunpowder River) - 480
02130804 (Little Gunpowder Falls) - 1000
02130805 (Loch Raven Reservoir) - 20

A map of 8 digit watershed with impervious totals and tables of attributes are included in Appendix C4. An electronic copy of the geodatabase, Impervious.mdb, was submitted with this report.

5. Monitoring locations: locations established for chemical, biological, and physical monitoring of watershed restoration efforts and the *2000 Maryland Stormwater Design Manual*; and

During this reporting period, there were 61 monitoring sites active including the locations required as listed above.

Monitoring Sites - 61

Chemical - 29

Biological – 16

Flow - 9

Physical - 5

Rainfall – 2

A map of all monitoring locations and table of attributes are included in Appendix C5. The spatial and tabular data for the monitoring locations required as listed above (Monitoring Site point feature class), were input into MDE's new geodatabase. An electronic copy of the geodatabase was submitted with this report.

6. Water quality improvement projects: projects proposed, under construction, and completed with associated drainage areas delineated.

During this reporting period, there were 12 watershed restoration projects active or completed:

Watershed Restoration Projects-12

Completed - 4

Under Construction – 1

Under Design - 7A

A map of the watershed restoration locations and table of attributes are included in Appendix C6. An electronic copy of the geodatabase, Restoration.mdb was submitted with this report.

D. Management Programs

The following management programs shall be implemented in areas served by Harford County's MS4. These management programs are designed to control stormwater discharges to the maximum extent practicable (MEP) and shall be maintained for the term of this permit. Additionally, these programs shall be integrated with other permit requirements to promote a comprehensive adaptive approach toward solving water quality problems. The County shall modify these programs according to needed program improvements identified as a result of periodic evaluations by MDE.

1. Stormwater Management

An acceptable stormwater management program shall continue to be maintained in accordance with the Environment Article, Title 4, Subtitle 2, Annotated Code of Maryland. Activities to be undertaken by the County shall include, but not be limited to:

- a. Implementing the stormwater management design policies, principles, methods, and practices found in the latest version of the 2000 Maryland Stormwater Design Manual. This includes:
 - i. Complying with the Stormwater Management Act of 2007 (Act) by implementing environmental site design (ESD) to the MEP for new and redevelopment projects;
 - ii. Tracking the progress toward satisfying the requirements of the Act and identifying and reporting annually the problems and modifications necessary to implement ESD to the MEP; and
 - iii. Reporting annually the modifications that have been made or need to be made to all ordinances, regulations, and new development plan review and approval processes to comply with the requirements of the Act.

Under Bill 10-11, Harford County updated Chapter 214 in February 2010 to comply with the Stormwater Management Act of 2007.

During this reporting period, no modifications to ordinances or regulations were necessary to comply with the requirements of the Act.

- b. Maintaining programmatic and implementation information including, but not limited to:
 - i. Number of Concept, Site Development, and Final plans received. Plans that are re-submitted as a result of a revision or in response to comments should not be considered as a separate project;
 - ii. Number of redevelopment projects received;
 - iii. Number of stormwater exemptions issued; and
 - iv. Number and type of waivers received and issued, including those for quantity control, quality control, or both. Multiple requests for waivers may be received for a single project and each should be counted separately, whether part of the same project or plan. The total number of waivers requested and granted for qualitative and quantitative control shall be documented.

Stormwater program data shall be recorded on MDE's annual report database and submitted as required in PART V of this permit.

For this reporting period, the following information was entered into MDE's new geodatabase (SWM Management Programs). The project issued a fee in lieu was added as a waiver. An electronic copy of the geodatabase was submitted with this report.

Stormwater Management Program

Concept Plans Received - 16
Site Development Plans Received - 15
Final Plans Received - 30
Redevelopment Project Received - 2
Stormwater Exemptions Issued - 1
Stormwater Waivers Issued – 5

- c. Maintaining construction inspection information according to COMAR 26.17.02 for all ESD treatment practices and structural stormwater management facilities including the number of inspections conducted and violation notices issued by Harford County.

For this reporting period, the following information was entered into MDE's new geodatabase (SWM Management Programs). An electronic copy of the geodatabase was submitted with this report.

Stormwater Management Construction

Construction Inspections - 493

Construction Violations - 0

- d. Conducting preventative maintenance inspections, according to COMAR 26.17.02, of all ESD treatment systems and structural stormwater management facilities at least on a triennial basis. Documentation identifying the ESD systems and structural stormwater management facilities inspected, the number of maintenance inspections, follow-up inspections, the enforcement actions used to ensure compliance, the maintenance inspection schedules, and any other relevant information shall be submitted in the County's annual reports.

At the end of the previous reporting period, 21 stormwater facilities were not in compliance for maintenance. Follow-up inspections were completed for all 21 stormwater facilities.

Previous Noncompliant SWM Facilities Maintenance - 21

Follow-up Inspections – 27

Facilities Compliant - 19

During this reporting period, triennial maintenance inspections were completed for 231 stormwater facilities. Twenty (20) follow-up inspections were completed.

SWM Facilities Triennial Maintenance - 231

Follow-up Inspections – 20

Facilities Compliant - 206

Follow up inspections are conducted after the property owner notifies Harford County that the requested maintenance has been completed. Follow-up Inspections are also conducted for facilities with active major repairs. During this reporting period, major repairs were completed for two (2) facilities. A table of the sites inspected for preventative maintenance is included in Appendix D1.

2. Erosion and Sediment Control

An acceptable erosion and sediment control program shall continue to be maintained and implemented in accordance with the Environment Article, Title 4, Subtitle 1, Annotated Code of Maryland. Activities to be undertaken by the County shall include, but not be limited to:

- a. Implementing program improvements identified in any MDE evaluation of the County's erosion and sediment control enforcement authority;

On April 30, 2015, MDE approved Harford County's application for continued delegation of the erosion and sediment control enforcement authority through June 30, 2017 (Appendix D2).

Results of the field audit conducted on February 12, 2015 and March 19, 2015 "found two items that need to be addressed by Harford County to improve program effectiveness."

"Complying with Maryland's specifications for temporary and final stabilization"

In June 2015, Harford County created a dedicated chief of environmental inspections who supervises both erosion and sediment control inspectors and stormwater management construction inspectors (Appendix A). This reorganization provides greater oversight and supervision of site inspections.

"Implementing progressive enforcement on sites where erosion and sediment control problems were found."

The two sites referenced in the field audit were brought into compliance shortly after the March 19, 2015 field audit. As discussed above the reorganization will allow greater oversight and supervision of site inspections (Appendix A).

- b. Ensure that construction site operators have received training regarding erosion and sediment control compliance and hold a valid Responsible Personnel Certification as required by MDE;

Harford County conducts a pre-construction meeting prior to the issuance of grading permits. Contractors are informed during these meetings that Responsible Personnel Certification is required along with NOI inspections as necessary. Meeting notes for all future pre-construction meetings will document these discussions.

- c. Program activity shall be recorded on MDE's annual report database and submitted as required in PART V of this permit; and

For this reporting period, the following information was entered into MDE's new geodatabase (SWM Management Programs). An electronic copy of the geodatabase was submitted with this report.

Erosion and Sediment Control Program

Active Permits - 82

Disturbed Area - 394 acres

Number of Inspections - 1705

Number of Violations - 171

Number of Stop Work Orders - 12

- d. Reporting quarterly, information regarding earth disturbances exceeding one acre or more. Quarters shall be based on calendar year and submittals shall be made within 30 days following each quarter. The information submitted shall cover permitting activity for the preceding three months.

All 27 grading permits issued during this reporting period exceeded one acre of earth disturbance. Quarterly reports were submitted as required.

A map of the grading permit locations and table of attributes are included in Appendix D2. The spatial and tabular data for the grading permit location (Quarterly Grading permits point feature class) and attributes (QuarterlyGradingPmtInfo table) were input into MDE's new geodatabase. It is unclear why there is a separate table used for the information. An electronic copy of the geodatabase was submitted with this report.

3. Illicit Discharge Detection and Elimination

Harford County shall continue to implement an inspection and enforcement program to ensure that all discharges to and from the MS4 that are not composed entirely of stormwater are either permitted by MDE or eliminated. Activities shall include, but not be limited to:

- a. Field screening at least 100 outfalls annually. Each outfall having a discharge shall be sampled using a chemical test kit. Within one year of permit issuance, an alternative program may be submitted for MDE approval that methodically identifies, investigates, and eliminates illegal connections to the County's storm drain system;

Outfall Screening Program

During this reporting period, Harford County modified its outfall screening procedure. To improve cost efficiency and to utilize existing County resources, Harford County construction

inspectors are performing the initial screening (Appendix A). By using our own inspectors, Harford County anticipates being able to initially screen 200 outfalls per year, twice the minimum requirement.

Harford County has developed an outfall screening app for inspectors to use that is compatible with their mobile devices (iPads). Targeted outfalls are pre-selected by geographic region with a desk-top exercise and loaded into the app. The app includes a series of drop-down choices to evaluate the condition of the outfall, verify its location, size, and composition, and to determine if there is dry-weather flow. If dry-weather flow exists, the inspector is prompted with a series of drop-down choices to describe the flow. The app allows the inspector to provide any additional comments and to include photographs. Images of the app are provided in Appendix D3. The Harford County MS4 Office conducted field training for the Inspectors in April, 2015. The inspectors began using the app in May, 2015.

If an outfall has dry-weather flow, an automated email is generated and sent to the Harford County MS4 Office for evaluation. Outfalls exhibiting dry-weather flow are placed in one of three categories.

Outfalls with obvious physical characteristics of suspected pollution (oil sheen, soap bubbles, unusual odor, etc.) are immediately referred to the County's contractor, Versar, Inc., for testing and source tracking. Outfalls discharging groundwater are eliminated from further testing. All other flowing outfalls are referred to Versar, Inc. on a monthly basis for testing and source tracking. The chemical and/or sonde testing of each outfall include the quantitative parameters; chlorine, color, copper, phenols, turbidity, surfactants (detergents), temperature, pH, conductivity, and dissolved oxygen. Testing and source tracking are performed using Versar, Inc. (2010) Harford County Illicit Discharge Monitoring Program: Site Selection, Screening, and Quality Assurance Protocols.

Outfall Screening Activities

During this report period, County inspectors inspected 99 outfalls. The 13 outfalls with dry weather flow were referred to Versar, Inc. for testing and source tracking, which was not completed within this reporting period. Follow-up will be documented in the next annual report.

Outfall Screenings – 99

No Flow – 86

Dry Weather Flow – 13

- b. Conducting annual visual surveys of commercial and industrial areas as identified in PART IV.C.2 above for discovering, documenting, and eliminating pollutant sources. Areas surveyed shall be reported annually;

Hotspot Investigation Program

Random Hotspots

“Random” hotspots are identified through commercial and industrial surveys conducted by Versar Inc. Versar and the Harford County MS4 Office jointly select locations within business parks, industrial parks, or properties identified within the tax records as commercial or industrial. Surveys are completed using datasheets (Appendix D3b) from the *Center for Watershed Protection’s Unified Subwatershed and Site Reconnaissance: A User’s Manual (2005)*.

“Random” hotspots with active pollution discharges are reported immediately to the Harford County MS4 Office or Harford County HAZMAT depending on the severity of the discharge. Discharges reported to Harford County HAZMAT are investigated immediately. Non-emergency discharges are investigated by the Harford County MS4 Office within the same business day.

“Random” hotspots, without active pollution discharge, are reported to the Harford County MS4 Office monthly.

Reported Hotspots

“Reported” hotspots are identified by citizens or County employees who report an issue via telephone, email or Facebook. “Reported” hotspots determined to an emergency are forwarded to Harford County HAZMAT. All other “reported” hotspots are investigated by the Harford County MS4 Office.

Verified Hotspots

The Harford County MS4 Office visits “random” hotspots and “reported” hotspots to verify the site as a hotspot, here forward called a “verified” hotspot.

“Verified” hotspots with active NPDES industrial permits or “verified” hotspots with activities that may require an NPDES industrial permit are forwarded to the MDE Compliance Hotline (866) MDE-GOTO. “Verified” hotspots that discharge into another jurisdiction’s MS4 system are forwarded to that jurisdiction (MD State Highway, City of Aberdeen, Town of Bel Air, City of Havre de Grace).

For each “verified” hotspot not referred to another jurisdiction, a case is opened and the property owner is contacted by mail. The letter documents the issues and lists the recommended remediation to be completed within a designated timeframe, typically 30 days. Follow-up with the property owner continues until the remediation is completed and the case is closed.

Hotspot Geodatabase

During this reporting period, Harford County developed a geodatabase to more efficiently track the status of hotspot investigations. The location, date and category for all hotspot investigations are entered into the geodatabase. For “verified” hotspots, a record is added to a case file for each date and action taken, such as letter to owner, email from owner, or site visit. The geodatabase allows for the visual assessment of the locations of hotspot investigations and easily documents open cases for follow-up.

Hotspot Investigation Activities

Ten of the 12 cases that remained open at the end of the previous reporting period were closed during this reporting period.

Existing Open Hotspot Cases - 12

Cases Closed – 10

Cases Remaining Open - 3

During this reporting period, four (4) “random” hotspots were identified during the commercial and industrial surveys. The Harford County MS4 Office will document the follow-up for these locations during the next reporting period.

The Harford County MS4 Office received four “reported” hotspots. Site visits for each “reported” hotspot were completed, all four sites were “verified” as hotspots, and cases were opened.

“Reported” Hotspots - 4

Follow-up Site Visits by Harford County - 4

“Verified” by Harford County - 4

Cases Opened – 4

Cases closed – 2

During the next reporting period, the Harford County MS4 Office will document activities for hotspot investigations that were not resolved within this reporting period.

The Hotspot Activity Report for this reporting period is provided in Appendix D3.

- c. Maintaining a program to address and, if necessary, respond to illegal discharges, dumping, and spills;

The Harford County MS4 Office continues to implement and improve initiatives to address illegal discharges, dumping and spills through coordination with Harford County Emergency Services, Harford County Division of Water and Sewer, and Harford County Health Department.

Illegal Discharges, Dumping and Spills Program

Reporting

The public has several phone numbers to report these activities. The numbers listed below are published in water and sewer bills, the Harford County website and public outreach literature.

Emergency Services (911) and Non-Emergency (410.638.3400)

Both phone numbers are monitored 24 hours a day and answered by trained public safety dispatchers. For spill response throughout the county including the municipalities, the HAZMAT Team responds to each incident.

Office of Watershed Protection and Restoration (410.638.3545)

All reports of illegal discharges, dumping and spills are transferred to the appropriate phone number listed above based on the level of imminent emergency.

Emergency Services

The HAZMAT Team operates 24 hours a day and consists of 31 certified Hazardous Materials technicians and five primary response vehicles. Training occurs continuously throughout the year. The HAZMAT Team responds to each call directed from the public safety dispatcher. Every attempt is made to recover spill materials before the spill reaches a stormdrain or waterway unless weather or terrain prohibits the recovery. All spills that reach a stormdrain or waterway are reported to Maryland Department of the Environment, Emergency Response. All spills that reach a navigable waterway are reported to the National Response Center. A HAZMAT Incident report is created for each response and contains a summary of the actions taken.

Local Emergency Planning Committee (LEPC)

The Local Emergency Planning Committee (LEPC) meets bi-monthly. One of several topics on the agenda includes the review of incidents of illegal discharges, spills and dumping to determine if enforcement action is warranted. The LEPC also conducts the investigative hearings and assesses fines as appropriate.

Division of Water and Sewer

The Harford County Health Department assists the Division of Water and Sewer with sewer overflows. They determine appropriate forms of public notification, identifying downstream users, directing stream testing and assessing adequacy of site cleanup.

Health Department

The Health Department responds to citizen reports of leaking or overflowing septic systems and private sewer lines. Most of these calls are placed directly to the Health Department offices. A portion of citizen reports are routed from Emergency Operations. The Harford County MS4 Office continues to work with sanitarians from the Bureau of Environmental Health to coordinate preventive and clean-up protocols regarding discharges (oil, grease, leaky dumpsters) from restaurants that impact the stormdrain system.

Illegal Discharges, Dumping and Spills Activities

The following is a summary of responses, investigations and enforcement activities related to illegal discharges, dumping and spills that occurred during this reporting period:

HAZMAT Team Responses

Total Responses – 98

Potential Water Quality Impact Responses – 42

LEPC Meetings

February 18, 2015

March 18, 2015

June 17, 2015

Detailed information for each is included in Appendix D3.

- d. Using appropriate enforcement procedures for investigating and eliminating illicit discharges, illegal dumping, and spills. Significant discharges shall be reported to MDE for enforcement and/or permitting; and

- e. Reporting illicit discharge detection and elimination activities as specified in PART V of this permit.

For this reporting period, activities for outfall screenings, hotspot investigations and spill response are listed above.

4. Litter and Floatables

This section of the permit requires Harford County to address problems associated with litter and floatables in waterways that adversely affect water quality. Increases in litter discharges to receiving waters have become a growing concern both nationally and within Maryland and cannot be ignored. Harford County needs to evaluate current litter control problems associated with discharges from its storm drain system and develop and implement a public outreach and education program as needed on a watershed by watershed basis.

The Division of Environmental Services implements the County's environmental, solid waste management and recycling programs. This includes managing the following operations: the Harford Waste Disposal Center, the Mulch & Compost operation, the Recycling Transfer Station, the Roadside Litter Control Program, the Used Oil & Anti-freeze Program and the Waste-to-Energy Facility.

The Division of Environmental Services prepared a comprehensive update to the Solid Waste Management Plan for the 2015 – 2024 planning period. The new Plan was introduced by the County Council under Bill No. 15-004. A public hearing was held on February 17, 2015, and the Council approved the Plan as amended on March 3, 2015. In May, 2015, MDE's Land Management Administration completed a review of the Plan and determined that the adopted Plan satisfied the requirements of Section 9-503(a) of the Environment Article and Code of Maryland Regulation 26.03.03. In accordance with Section 9-507(a) of the Environmental Article, Annotated Code of Maryland, the Plan was approved.

At the close of this reporting period, the Division of Environmental Services began a transition period in which the Administration elected to outsource the County's solid waste management services to the Maryland Environmental Service (MES).

- a. As part of Harford County's watershed assessments under PART IV.E.1 of this permit, Harford County shall document all litter control programs and identify potential sources, ways of elimination, and opportunities for overall improvement.

During this reporting period, no watershed assessments were completed. Future assessments will include documentation of litter and floatables.

The Litter Control Program consists of staff picking up blown litter at the Harford Waste Disposal Center and along County roadways, as well as cleaning up of dumped trash, recycling and illegal dumpsites throughout the County. Staff also assisted Community Service workers and citizens participating in the Absent Parent Program. During this reporting period, the Litter Control Program reported the following:

Litter Control Program
46,720 lbs of Trash Collected
11,508 lbs of Recycling Collected
244.2 miles Cleaned

The County has a very successful Adopt-A-Road program, whereby County residents or groups of residents adopt a portion of a roadway in their community and agree to collect roadside litter at a specified frequency. The County provides supplies and materials for these residents. During this reporting period, the Adopt-A-Road Program reported the following:

Adopt-A-Road Program
3,795 lbs of Trash Collected
2,566 lbs of Recyclables Collected
91.1 miles Cleaned

Both groups combined collected 221 tires.

- b. Within one year of permit issuance, as part of the public education program described in PART IV.D.6., Harford County shall develop and implement a public education and outreach program to reduce littering and increase recycling. This shall include:
 - i. Educating the public on the importance of reducing, reusing, and recycling;
 - ii. Disseminating information by using signs, articles, and other media outlets; and
 - iii. Promoting educational programs in schools, businesses, community associations, etc.

Harford County's Division of Environmental Services currently administers a public education and outreach program to reduce littering and increase recycling.

Waste reduction is the preferred method in the solid waste management hierarchy. Reductions in waste generation lessen the burden of solid waste management by decreasing the amount of material entering the system. The waste reduction plan reflects a multi-faceted approach.

The curbside collection of waste and recyclables is available to residents and services are provided by local trash collection companies. Residents who do not subscribe to a curbside collection service may drop-off material at the HWDC. A 2014 phone survey indicated about 85 percent of all residents recycle with about 80 percent subscribing to a curbside collection program and about four percent self-hauling to the HWDC.

Media Outlets

The County has consistently spent considerable resources targeting County residents with various forms of advertisement through local radio, newspapers, magazines, and website ads. In addition, the Office of Recycling maintains a website, www.Harfordrecycles.org, which includes in-depth information on the importance of waste reduction and information regarding all the recycling programs available for County residents. The website is updated frequently to highlight seasonal programs and events such as Christmas tree recycling and Grasscycling. The Harford County Reuse Guide is maintained on this website as well as a list of frequently asked questions. Brochures are available for Harford County residents both on the website and in

print. Topics include Grasscycling, Single Stream Recycling, Business Recycling, Textile and Electronics Recycling, used motor oil and antifreeze recycling General Recycling Available at the HWDC, and Mulch and Compost Information.

Social media has become a critical tool for outreach and education. The Office of Recycling maintains an active Facebook page <https://www.facebook.com/HarfordCountyRecycling> which encourages communication and engagement with residents and businesses concerning waste reduction and recycling opportunities. The Facebook page allows the Office of Recycling to post educational information, address questions, and promote recycling. Contests and giveaways are employed to encourage participation and discussion on the page.

School Programs

Harford County Public Schools recognizes the importance of recycling, and as such, the Harford County Recycling Coordinator provides a presentation to every Fourth Grade science class in the Harford County Public School system and teaches the importance of waste reduction and recycling. The Office of Recycling provides presentations, lessons, and activities to accompany the curriculum. In addition, the Office of Recycling acts as a resource for middle and high schools. This takes the form of providing teacher training and materials, presentations and lessons for students, and assistance in special recycling events. School groups are also encouraged to visit the HWDC to see landfilling and recycling in action.

Community Programs

Community outreach is another important aspect of public education. Community groups are encouraged to contact the Office of Recycling and schedule presentations and tours of the HWDC. In addition, the Office of Recycling participates in local special events, expos, fairs, and business events to highlight recycling.

Business Program

Businesses are also encouraged to recycle through the Partners in Recycling program. This program recognizes businesses who are recycling with a display sticker, a listing on our website, and inclusion in media advertising. The Office of Recycling provides assistance to businesses looking to recycle in the form of waste assessments, educational materials, and training sessions in waste reduction and recycling. The Office of Recycling also reaches out to businesses and offers on-site visits to discuss business recycling opportunities and the result on their

bottom-line. Businesses that are recycling are encouraged to apply for recognition through the annual Business Recycling Awards program. Awards are given to a small business, a large business, and a property management company who demonstrate a commitment to recycling and source reduction in their organization. Award winners receive a plaque during a public award ceremony, and are included in an announcement through various media outlets.

Business recycling in Harford County is strictly voluntary. Unfortunately, many businesses do not recycle which is evident by significant quantities of recyclables observed entering the landfill for disposal. Whenever large quantities of recyclables are received, the County attempts to track the origin of the load and pinpoint the business that generated the recyclables. Some conversations with these business owners indicate that (1) the local trash collection companies market their services in ways that do not lessen the business owner's costs for recycling and/or (2) it is corporate policy not to recycle unless local government laws require recycling.

Parks and Recreation Programs

As part of the Harford County Land Preservation, Parks, and Recreation Plan, the Department identified recycling and other conservation practices as part of the Department's overall strategic plan. Working in partnership with Harford County Public Schools, Parks and Recreation began a pilot program to implement single stream recycling at all public school stadiums and then expanded the program to include all school sites as part of a County-wide implementation at all Department parks and facilities. As a result of the successful partnership with Harford County Public Schools, the Department of Parks and Recreation fully implemented single stream recycling at all parks, centers, offices, sports fields, and special events. Working in cooperation with the Harford County Office of Sustainability and the Division of Environmental Services, Recycling Office, Parks and Recreation purchase 400 additional recycling containers, lids, and signage to implement the "Recycling Just Like at Home" program.

Computer and Electron Program

The proliferation of computer and consumer electronics has resulted in continued growth in this portion of the U.S. waste stream. Electronic recyclables include computers, non-CRT computer monitors, computer peripherals, non-CRT televisions, stereophonic equipment, VCRs, DVRs, cellphones, and similar electronic products. Harford County has a contract in place with an eCycling vendor Harford County intends to continue to offer this service to County residents and businesses in the future.

Household Hazardous Waste Program

Harford County Division of Environmental Services has held a household hazardous waste collection day twice each year for County residents in cooperation with the MES. To be accepted, all items must be in containers with quantities of quantities normally found in retail stores. Items accepted include oil-based paints and stains, herbicides, pesticides, mercury thermometers, mercury containing thermostats, fluorescent light tubes and CFLs, pool chemicals, caustic cleaners, acids, and other items deemed appropriate.

- c. Evaluating annually the effectiveness of the education program.
- d. Submit annually, a report which details progress toward implementing the public education and outreach program. The report shall describe the status of public outreach efforts including resources (e.g., personnel and financial) expended and the effectiveness of all program components.

During this reporting period, the Office of Recycling reported the following:

Recycling education and outreach to 2,400 County residents

5 tours of the Harford Waste Disposal Center

16 school presentations

5 public outreach events

Published 20 advertisements in local papers, magazines, mailings, and websites

The success of the recycling education and outreach program is measured by the compilation and the submittal of two annual reports to the MDE. These include the Maryland Recycling Act Report and the County Source Reduction (SR) Credit Report.

Although Harford County has been a leader in its recycling rates, significant amounts of recyclables are observed daily within the solid waste loads disposed of at the landfill. The County has spent over \$300,000 annually in its public outreach and education programs during the past planning period. It is believed that, no matter how many resources are utilized in

public outreach and education, at some point a plateau is reached in its effectiveness. No matter how much effort is put into this endeavor, there will always be residents who refuse to participate in recycling. Funding, education, and outreach alone cannot change everyone's behavior.

5. Property Management and Maintenance

- a. Harford County shall ensure that a Notice of Intent (NOI) has been submitted to MDE and a pollution prevention plan developed for each County-owned municipal facility requiring NPDES stormwater general permit coverage. The status of pollution prevention plan development and implementation for each County-owned municipal facility shall be reviewed, documented, and submitted to MDE annually.

Notice of Intent (NOI) for County Owned Property

NOIs and pollution prevention plans for all County owned properties requiring coverage under the general stormwater permit (12SW) have been submitted and approved.

County Owned Property 12SW General Permit

Abingdon Highway Maintenance Facility – 12SW1271

Fallston Parks and Recreation Maintenance Facility – 12SW2095

Hickory II Highway Maintenance Facility – 12SW1714

Jarrettsville Highway Maintenance Facility – 12SW2474

Jarrettsville Parks and Recreation Maintenance Facility – 12SW2094

Public Schools Maintenance Facility – 12SW2084

Scarboro Landfill – 12SW0028

Sod Run Waste Water Treatment Plant – 12 SW1727

Whiteford Highway Maintenance Facility – 12SW1847

During this reporting period, annual inspections were completed for three facilities (Appendix D5). The Harford County MS4 Office along with each facility manager inspected the site and

reviewed the pollution prevention plan for completeness. Minor housekeeping improvements were noted and implemented.

Annual Pollution Prevention Inspections

Hickory II Highway Maintenance Facility – 12SW1714

Jarrettsville Highway Maintenance Facility – 12SW2474

Whiteford Highway Maintenance Facility – 12SW1847

- b. The County shall continue to implement a program to reduce pollutants associated with maintenance activities at County-owned facilities including parks, roadways, and parking lots. The maintenance program shall include these or MDE approved alternative activities:
 - i. Street sweeping;
 - ii. Inlet inspection and cleaning;
 - iii. Reducing the use of pesticides, herbicides, fertilizers, and other pollutants associated with vegetation management through increased use of integrated pest management;
 - iv. Reducing the use of winter weather deicing materials through research, continual testing and improvement of materials, equipment calibration, employee training, and effective decision-making; and
 - v. Ensuring that all County staff receives adequate training in pollution prevention and good housekeeping practices.

The County shall report annually on the changes in any maintenance practices and the overall pollutant reductions resulting from the maintenance program. Within one year of permit issuance, an alternative maintenance program may be submitted for MDE approval indicating the activities to be undertaken and associated pollutant reductions.

During the report period, Harford County Highways Division continued its road maintenance operations to ensure public safety in a cost-efficient manner.

During the report period, Harford County Highways Division implemented a new system to maximize the efficiency of equipment usage. The *PreCise® Mobile Resource Management* is designed to track the location of all vehicles to maximize equipment uptime, redeploy equipment where it will be more effective, track salt usage and adhere more easily to environmental policies. The new system can produce reports for vehicle travel patterns, down time, break-downs and travel speed.

Street Sweeping

Harford County maintains 1,066 miles of roadway. Approximately 80% of all public streets are swept annually with a mechanical brush vacuum truck. Additionally, certain major collector roads may be swept monthly. During this reporting period, 907.7 lane miles of hard surface roads were swept. The street sweeping practice collected 793 tons of material. Material collected during street sweeping is disposed of in the local landfill or maintenance yard. Dirt roads are not swept.

Inlet Inspection and Cleaning

Inlets are scheduled to be cleaned every three years. Inlets may be cleaned more frequently if needed. Inlets may be cleaned with vacuum sweepers, backhoes, or manually. During the report period, 1,298 inlets were inspected and were cleaned as needed resulting in 19 tons of material removed from the stormdrain system.

Roadside Vegetation Management

Mowing and trimming are the primary means of managing roadside vegetation. During the permit period, Harford County Highways Division mowed 444 road miles, trimmed 149,268 feet of guardrail, and trimmed around 7,203 road signs. Additionally, the County employs contractors to mow medians, mow County-owned stormwater management ponds, and to trim and remove trees. Herbicides are only used beneath guardrails that cannot be mowed or trimmed. No herbicides are applied immediately adjacent to stream crossings. Harford County Highways Division does not use fertilizer for roadside maintenance.

Deicing

All dump trucks are calibrated to deliver between 300 and 550 pounds of salt per land mile. County staff evaluates road conditions for each storm to determine the most effective treatment for the conditions of the particular storm and for the area of the County affected. Depending on the storm, the County may pre-treat roads with salt brine to improve the efficiency of snow removal. Salt usage for the winter of 2014 – 2015 was reported in the 2014 Annual Report.

Employee Training

Harford County Highways Division conducts monthly safety training for its staff. At a minimum, the topics of spill response and reporting and good housekeeping practices are covered annually. Equipment operators are trained and tested annually.

6. Public Education

Harford County shall continue to implement a public education and outreach program to reduce stormwater pollutants. Outreach efforts may be integrated with other aspects of the County's activities. These efforts are to be documented and summarized in each annual report. The County shall continue to implement a public outreach and education campaign with specific performance goals and deadlines to:

- a. Maintain a compliance hotline or similar mechanism for public reporting of water quality complaints, including suspected illicit discharges, illegal dumping, and spills.

Reporting mechanisms are described in Section D. 3. c.

- b. Provide information to inform the general public about the benefits of:
 - i. Increasing water conservation;
 - ii. Residential and community stormwater management implementation and facility maintenance;
 - iii. Proper erosion and sediment control practices;
 - iv. Increasing proper disposal of household hazardous waste;
 - v. Improving lawn care and landscape management (e.g., the proper use of herbicides, pesticides, and fertilizers, ice control and snow removal, cash for clippers, etc.);
 - vi. Residential car care and washing; and
 - vii. Proper pet waste management.

Public Outreach Events

In June, 2015, staff participated in the Upper Western Shore Wade-In held at the Anita C. Leight Estuary Center. During this event, staff promoted the importance of healthy watersheds, the need for proper erosion and sediment control measures, the impacts of impervious surfaces, the importance of the Critical Area Program, the benefits of recycling, native plants, proper lawn care, best management practices, and rain gardens, the importance of proper disposal of hazardous household materials and pet waste, along with additional nonpoint source pollution and stormwater related materials. Staff offered promotional items such as t-shirts, pencils, and environmentally themed toys, balls and recycled Frisbees. Staff engaged the public in conversation about relevant environmental and watershed issues and enticed the youth with watershed and insect puzzles, games and water conservation coloring books.

School Activities

In March 2015, staff participated as a judge and mentor for the St. Stephen School annual science fair. Activities included classroom presentations on types of experiments to perform, principles of the scientific method, ways to effectively collect and display data and communicate results.

In May 2015, staff conducted an aquatic insect demonstration for preschool, 1st and 2nd grade students at North Harford Elementary School. Staff utilized preserved specimens from the County's reference collection and live specimens collected from Falling Branch, a tributary to Deer Creek to demonstrate the importance of aquatic communities. The discussion included explanations of insect life cycles, food webs, ecosystems and watersheds, what they are and why they are important. The discussion explained how everyday human activities and land use changes impact our watersheds and water quality in addition to stressing what individuals can do to improve water quality.

In May 2015, staff assisted Norrisville Elementary School students in planting native perennials in the rain garden that was constructed on school property. In September 2014, staff held a presentation for the students about the importance and function of a rain garden and the role these management practices play in improving water quality and providing habitat and a food source for wildlife. Students assisted County staff with developing the landscape plan for the rain garden by selecting the specific flowering, native plants they wanted planted in the new garden.

In June 2015, staff partnered with Magnolia Middle School and the Maryland Conservation Corps by flagging tree stumps in support of the Stream Challenge Grant reforestation area on the school campus. School Facility staff will remove flagged stumps in order to develop a more efficient and consistent mowing schedule for the campus. Crews removed invasive vines so the plants will not aggressively take over the newly planted trees and also established a mulch path for future maintenance activities and access to the stream located on the school property.

During this reporting period, staff met several times with the Environmental Club at Forest Hill Elementary School and discussed the water cycle, impervious surfaces, water quality monitoring, and watershed restoration. The purpose of the presentations was to prepare the students for a day long field trip on the Bay. The Environmental Club also assisted staff in a spring cleanup of the rain gardens at the school.

Miscellaneous Outreach

In June 2015, staff attended the Climate Adaptation for Coastal Communities Workshop, sponsored by Maryland DNR's Chesapeake and Coastal Service and the National Oceanic and Atmospheric Administration (NOAA). This was an interactive 3-day training course that provided individuals and communities with a climate adaptation toolkit to proactively address adaptation planning in the context of local government priorities. The course topics included

Setting the Course for Adaptation; Climate Science: Understanding global & local impacts of climate change; Vulnerability Assessment: Informing Adaptation Strategies; Climate Communication: Applying Communication Research to be Effective; and Implementation: Turning Strategies into Action.

Anita C. Leight Estuary Center

The ACLEC is a Harford County Department of Parks and Recreation facility and is a component of the Chesapeake Bay National Estuarine Research Reserve (CBNERR). OPCA is the non-profit organization of the ACLEC dedicated to supporting the ACLEC's and CBNERR's mission to increase the awareness, understanding, and appreciation of estuarine ecosystems through research, monitoring, and education. The OPCA efforts include raising money, securing volunteers, sponsoring special events and aiding staff in implementing the CBNERR's Management Plan. During this reporting period, staff continued to serve on the board of directors for the Anita C. Leight Center's (ACLEC) Otter Point Creek Alliance (OPCA).

During this reporting period, the ACLEC reached 2,190 students and the general public through outreach events that included Earth Day events, Arbor Day Festival, World Wetlands Day, Harford and Cecil County Wade-Ins, elementary school outreach programs on Chesapeake Bay Wildlife, and environmental festivals at the National Aquarium and Masonville Cove Environmental Center.

ACLEC staff conducted numerous watershed education field trips and served 463 students in grades 2 – 12. These field trips included the Otter Point Creek Environmental Survey (OPCS), Marsh Ecology, Chesapeake Bay Ecology, and SAV and the Bay. The ACLEC also held Teachers on the Estuary professional development workshop for educators that aided 9 participants.

ACLEC staff sponsored an evening lecture series called 'Nature and Nosh' and brought in speakers to discuss topics such as estuarine and tidal fresh fish species, fish ecology, freshwater health and SAV in the Chesapeake Bay, attracting an adult audience of 32.

ACLEC volunteers contributed 460 hours towards stewardship projects that included the removal of invasive plants, the annual Marsh Clean Up, shoreline clean up, growing and planting bay grasses, planting native plants in the Critical Areas, and E-cycling.

CBNERR staff, ACLEC staff along with a dedicated corps of volunteers, who contributed approximately 115 hours, conducted various physical, biological and chemical monitoring

efforts in Otter Point Creek and its tributaries. The teams completed a physical stream assessment on HaHa Branch and collected and analyzed discrete water samples, juvenile fish, SAV and zooplankton.

The information below summarizes the number of people reached during each of the educational opportunities available through the ACLEC in an attempt to evaluate the effectiveness of the environmental programs. A table detailing each activity is included in Appendix D6.

Number of People Reached

General Public – 1640

Elementary, Middle and High School Students – 823

Organized Groups – 414

- c. Provide information regarding the following water quality issues to the regulated community when requested:
 - i. NPDES permitting requirements;
 - ii. Pollution prevention plan development;
 - iii. Proper housekeeping; and
 - iv. Spill prevention and response.

The regulated community consists of businesses and industries that have been issued permits by MDE. If requested by the regulated community, the Harford County MS4 Office will provide MDE's document, *Stormwater Pollution Prevention Guidance* and refer the business or industry directly to MDE for further guidance. If Harford County determines that a business or industry does not have an NPDES permit, but engages in activities that should be permitted, that information is forwarded to MDE for further action.

E. Restoration Plans and Total Maximum Daily Loads

In compliance with §402(p)(3)(B)(iii) of the CWA, MS4 permits must require stormwater controls to reduce the discharge of pollutants to the MEP. By regulation at 40 CFR §122.44, BMPs and programs implemented pursuant to this permit must be consistent with applicable WLAs developed under EPA approved TMDLs (see list of EPA approved TMDLs attached and incorporated as Attachment B).

Harford County shall annually provide watershed assessments, restoration plans, and opportunities for public participation, and TMDL compliance status to MDE. A systematic assessment shall be conducted and a detailed restoration plan developed for all watersheds within Harford County. As required below, watershed assessments and restoration plans shall include a thorough water quality analysis, identification of water quality improvement opportunities, and a schedule for BMP and programmatic implementation to meet stormwater WLAs included in EPA approved TMDLs.

Watershed assessments are completed to systematically identify opportunities for watershed restoration. The completion of watershed assessments for the entire County is labor and cost intensive.

During this permit cycle, Harford County will complete watershed assessments, hereafter called small watershed assessments, as detailed below in order to provide sufficient opportunities to meet the restoration requirements established within this permit.

Despite Harford County's opposition to completing assessments for the entire county, a watershed restoration master plan will be developed for the entire county for each 8-digit watershed. The watershed restoration master plan will provide a broad characterization for each watershed based on a GIS desktop analysis and a schedule for conducting small watershed assessments. The schedule will focus on conducting small watershed assessments with the anticipation that restoration implementation will begin within three years. Watershed functions are highly dynamic and field changes can occur rapidly. Conducting detailed small watershed assessments for the entire county is not cost effective and can lead to obsolete plans that need to be updated prior to implementation.

The following small watershed assessments have been completed and are available online at <http://www.HarfordCountyMD.gov> :

Completed Small Watershed Assessments

Wheel Creek (2008) - 740 acres

Plumtree Run (2011) - 1,400 acres

Sam's Branch (2012) - 370 acres

Foster Branch (2012) - 1,400 acres

- b. Watershed assessments by the County shall:
 - i. Determine current water quality conditions;
 - ii. Include the results of a visual watershed inspection;
 - iii. Identify and rank water quality problems;
 - iv. Prioritize all structural and nonstructural water quality improvement projects; and
 - v. Specify pollutant load reduction benchmarks and deadlines that demonstrate progress toward meeting all applicable stormwater WLAs.

No small watershed assessments were completed during this reporting period.

2. Restoration Plans

- a. Within one year of permit issuance, Harford County shall submit an impervious surface area assessment consistent with the methods described in the MDE document “Accounting for Stormwater Wasteload Allocations and Impervious Acres Treated, Guidance for National Pollutant Discharge Elimination System Stormwater Permits” (MDE, June 2011 or subsequent versions). Upon approval by MDE, this impervious surface area assessment shall serve as the baseline for the restoration efforts required in this permit.

The impervious surface assessment will be submitted to MDE in December 2015.

By the end of this permit term, Harford County shall commence and complete the implementation of restoration efforts for twenty percent of the County’s impervious surface area consistent with the methodology described in the MDE document cited in PART IV.E.2.a. that has not already been restored to the MEP. Equivalent acres restored of impervious surfaces, through new retrofits or the retrofit of pre-2002 structural BMPs shall be based upon the treatment of the WQv criteria and associated list of practices defined in the 2000 Maryland Stormwater Design Manual. For alternate BMPs, the basis for calculation of equivalent impervious acres restored is based upon the pollutant loads from forested cover.

During this reporting period, four (4) watershed restoration projects were completed for a total cost for design and construction of \$691,747. Combined, these projects treat 14.22 impervious acres. One (1) project was under construction at the end of this reporting period and seven (7) projects were under design.

Watershed Restoration Projects (Completed)

Norrisville Elementary Bioretention Facility
Oakmont Road Tree Planting
Rider Lane Tree Planting
Woodbridge Stream Restoration

Watershed Restoration Projects (Under Construction)

Festival at Bel Air SWM Retrofit

Watershed Restoration Projects (Under Design)

Barrington Stream Restoration
Country Walk 1A SWM Retrofit
County Walk 1B SWM Retrofit
Foster Branch at Dembytown Stream Restoration
Lower Wheel Creek SWM Retrofit & Stream Restoration
Ring Factory Elementary SWM Retrofit & Stream Restoration
Willoughby Beach Road Extended SWM Retrofit & Stream Restoration

A map and table for each completed project is included in Appendix E1. An electronic copy of the database, restoration.mdb was submitted with this report.

- b. Within one year of permit issuance, Harford County shall submit to MDE for approval a restoration plan for each stormwater WLA approved by EPA prior to the effective date of the permit. The County shall submit restoration plans for subsequent TMDL WLAs within one year of EPA approval. Upon approval by MDE, these restoration plans will be enforceable under this permit. As part of the restoration plans, Harford County shall:
 - i. Include the final date for meeting applicable WLAs and a detailed schedule for implementing all structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives necessary for meeting applicable WLAs;
 - ii. Provide detailed cost estimates for individual projects, programs, controls, and plan implementation;
 - iii. Evaluate and track the implementation of restoration plans through monitoring or modeling to document the progress toward meeting established benchmarks, deadlines, and stormwater WLAs; and
 - iv. Develop an ongoing, iterative process that continuously implements structural and nonstructural restoration projects, program enhancements, new and additional programs, and alternative BMPs where EPA approved TMDL stormwater WLAs are not being met according to the benchmarks and deadlines established as part of the County's watershed assessments.

Watershed Restoration Plans

In accordance with the Order to Extend Stay of Proceedings dated September 5, 2015 (Appendix E2), Harford County will submit a watershed restoration plan for each stormwater WLA approved by EPA by February 1, 2016.

Watershed Restoration Monitoring

USGS Stream Gages

Harford County Department of Public Works and the United States Geological Survey (USGS) partnered for the continued operation of the following gages through June 2015

Bynum Run at Bel Air (01581500) – restarted 1999

Plumtree Run near Bel Air (01581752) – installed 2001

James Run near Belcamp (01581649) – installed 2004

Swan Creek at Swan Creek (01580700) – installed 2007

Wheel Creek near Abingdon (0158175320) – installed 2009

The operation of these gages supports the ongoing efforts to create a state-wide stream gaging network, and the data will supplement information recorded at additional Harford County gages that are not funded by the County. The data collected at each of these gages is presented in ‘real-time’ at <http://waterdata.usgs.gov/md/nwis/rt>.

During this reporting period, the Harford County MS4 Office continued to partner with the USGS to monitoring the water quality in the Plumtree Run Watershed. The County developed a long term restoration plan for this watershed and is conducting monitoring activities through a single, coordinated strategy rather than by monitoring each individual stream restoration project in the watershed. All water quality monitoring is conducted at the Plumtree Run gage (USGS monitoring station 01581752), and site operation is designed to be compatible with the Chesapeake Bay Nontidal Monitoring Network (NTN) to maintain the ability to compare conditions observed at this station to those measured across the region. The monitoring plan consists of samples collected on a monthly fixed-frequency interval augmented with samples collected during eight to ten storm events that are analyzed for nutrients, suspended sediment, and dissolved chloride and *E. coli* bacteria. Continuous water quality monitoring data for water temperature, specific conductance and turbidity is also collected and displayed in near real time on the USGS web page.

Data collected for this study will be used to detail current water quality conditions in Plumtree Run and document improvements to water quality as watershed restoration activities are

implemented in the watershed. All data is reviewed and posted in the USGS National Water Information System (NWIS) and published in the USGS annual data report of the MD-DE-DC Water Science Center available at <http://wdr.water.usgs.gov/>.

3. Public Participation

Harford County shall provide continual outreach to the public regarding the development of its watershed assessments and restoration plans. Additionally, the County shall allow for public participation in the TMDL process, solicit input, and incorporate any relevant ideas and program improvements that can aid in achieving TMDLs and water quality standards. Harford County shall provide:

- a. Notice in a local newspaper and the County's website outlining how the public may obtain information on the development of watershed assessments and stormwater watershed restoration plans and opportunities for comment;
- b. Procedures for providing copies of watershed assessments and stormwater watershed restoration plans to interested parties upon request;
- c. A minimum 30 day comment period before finalizing watershed assessments and stormwater watershed restoration plans; and
- d. A summary in each annual report of how the County addressed or will address any material comment received from the public.

There were no public participation activities during this reporting period, since no watershed assessments or restoration plans were completed.

4. TMDL Compliance

Harford County shall evaluate and document its progress toward meeting all applicable stormwater WLAs included in EPA approved TMDLs. An annual TMDL assessment report with tables shall be submitted to MDE. This assessment shall include complete descriptions of the analytical methodology used to evaluate the effectiveness of the County's restoration plans and how these plans are working toward achieving compliance with EPA approved TMDLs. Harford County shall further provide:

- a. Estimated net change in pollutant load reductions from all completed structural and nonstructural water quality improvement projects, enhanced stormwater management programs, and alternative stormwater control initiatives;
- b. A comparison of the net change in pollutant load reductions detailed above with the established benchmarks, deadlines, and applicable stormwater WLAs;
- c. Itemized costs for completed projects, programs, and initiatives to meet established pollutant reduction benchmarks and deadlines;
- d. Cost estimates for completing all projects, programs, and alternatives necessary for meeting applicable stormwater WLAs; and
- e. A description of a plan for implementing additional watershed restoration actions that can be enforced when benchmarks, deadlines, and applicable stormwater WLAs are not being met or when projected funding is inadequate.

This information will be submitted in the next annual report, since the restoration plans will not be completed until February 1, 2016.

F. Assessment of Controls

Harford County and ten other municipalities in Maryland have been conducting discharge characterization monitoring since the early 1990s. From this expansive monitoring, a statewide database has been developed that includes hundreds of storms across numerous land uses. Analyses of this dataset and other research performed nationally effectively characterize stormwater runoff in Maryland for NPDES municipal stormwater purposes. To build on the existing information and to better track progress toward meeting TMDLs, better data are needed on ESD performance and BMP efficiencies and effectiveness.

Assessment of controls is critical for determining the effectiveness of the NPDES stormwater management program and progress toward improving water quality. The County shall use chemical, biological, and physical monitoring to assess watershed restoration efforts, document BMP effectiveness, or calibrate water quality models for showing progress toward meeting any applicable WLAs developed under EPA approved TMDLs identified above. Additionally, the County shall conduct physical stream monitoring to assess the implementation of the latest version of the 2000 Maryland Stormwater Design Manual. Specific monitoring requirements are described below.

1. Watershed Restoration Assessment

The County shall continue monitoring in the Wheel Creek watershed, or select and submit for MDE's approval a new watershed restoration project for monitoring. Monitoring activities shall occur where the cumulative effects of watershed restoration activities can be assessed. One outfall and an associated in-stream station, or other locations based on a study design approved by MDE, shall be monitored. The minimum criteria for chemical, biological, and physical monitoring are as follows:

Wheel Creek Watershed Background

In 2009, the Harford County MS4 Office and MDE selected the Wheel Creek watershed to monitor ambient conditions. The Wheel Creek watershed (unofficially named) is centrally located in Harford County, approximately three miles south of the Town of Bel Air. It is a second order tributary to Winters Run (MDE8DIGIT 02130702) and Atkisson Reservoir (MDE8DIGIT 02130703) in the Bush River watershed (MDE6DIGIT 021307). Wheel Creek is situated along the eastern edge of the Piedmont physiographic province, drains 435 acres, and contains approximately 27% impervious cover. A mixture of commercial and high density residential land use dominate the headwaters, along with a mixture of medium and low density residential land use. The Harford Glen Environmental Education Center, which is part of the Harford County Public School system, is located in the lower reaches of the watershed and is predominately forest.

Wheel Creek Watershed

Bush River (MDE6DIGIT 021307)

Winters Run (MDE8DIGIT 02130702)

Atkisson Reservoir (MDE8DIGIT 02130703)

Piedmont physiographic province

435 acres

27% impervious cover

This watershed was selected based on the channel instability, sedimentation, pond retrofit and stream restoration opportunities and implementation recommendations outlined initially in the *Bush River Water Restoration Action Strategy* and more detailed in the *Wheel Creek Small Watershed Assessment*.

Wheel Creek Small Watershed Assessment

The following is a summary of the status of the watershed restoration projects recommended within the Wheel Creek Small Watershed Assessment completed in 2008:

Constructed

Gardens of Bel Air SWM Retrofit (2013)

Calverts Walk Stream Restoration (2013)

Under Construction

Festival at Bel Air SWM Retrofit (2015)

Under Design

Country Walk 1A SWM Retrofit

County Walk 1B SWM Retrofit

Lower Wheel Creek SWM Retrofit & Stream Restoration

Design Pending

Rt. 24 at Wheel Road SWM Retrofit

Project success will be evaluated through a pre and post construction monitoring effort that includes chemical, biological and physical monitoring components that began in January 2010.

a. Chemical Monitoring:

Eight (8) storm events shall be monitored per year at each monitoring location with at least two occurring per quarter. Quarters shall be based on the calendar year. If extended dry

- i. weather periods occur, baseflow samples shall be taken at least once per month at the monitoring stations if flow is observed;
- ii. Discrete samples of stormwater flow shall be collected at the monitoring stations using automated or manual sampling methods. Measurements of pH and water temperature shall be taken;
- iii. At least three (3) samples determined to be representative of each storm event shall be submitted to a laboratory for analysis according to method listed under 40 CFR Part 136 and event mean concentrations (EMC) shall be calculated for:

Biochemical Oxygen Demand (BOD5)	Total Lead
Total Kjeldahl Nitrogen (TKN)	Total Copper
Nitrate plus Nitrite	Total Zinc
Total Suspended Solids	Total Phosphorus
Total Petroleum Hydrocarbons (TPH)	Hardness
E. coli or enterococcus	
- iv. Continuous flow measurements shall be recorded at the in-stream monitoring station or other practical locations based on the approved study design. Data collected shall be used to estimate annual and seasonal pollutant loads and reductions, and for the calibration of watershed assessment models. Pollutant load estimates shall be reported according to any EPA approved TMDLs with a stormwater WLA.

Wheel Creek Chemical Monitoring Sites

Three permanent water quality monitoring stations were established in the Wheel Creek watershed between the summer of 2010 and the spring of 2011.

Station WC002 (In-stream)

Located on the mainstem of Wheel Creek just downstream of Wheel Road

Station WC003 (Outfall)

Located on the Middle Branch of Wheel Creek
Outfall from the instream SWM facility on Cinnabar Lane

Station WC004 (In-stream)

Located upstream of WC003 on the Middle Branch just off Wheel Court

Chemical Sample Analysis

QC Laboratory analyzed storm event and baseflow samples for all of the parameters listed below except for *E. coli*. *E. coli* was analyzed by Enviro-Chem Laboratory. Standard Methods or EPA methods are currently being used for the analysis. Harford County requests that MDE review these methods and detection limits and provide alternatives if found to be unacceptable. Each sample was analyzed for the parameters listed in the table below. Data results are included in Appendix F1.

Parameter	Method	Reporting Limit
5-day Biological Oxygen Demand (BOD5)	SM 5210 B	2.00 mg/L
Total Suspended Solids (TSS)	SM 2540 D	4.00 mg/L
Total Kjeldahl Nitrogen (TKN)	EPA 351.2	0.200 mg/L
Total Phosphorus (TP)	EPA 365.4	0.0500 mg/L
Total Petroleum Hydrocarbons (TPH)	EPA 1664BSGT@PHC	5.00 mg/L
Total Copper (Cu)	EPA 200.7 Rev 4.4	0.005 mg/L
Total Zinc (Zn)	EPA 200.7 Rev 4.4	0.005 mg/L
Total Lead (Pb)	EPA 200.7 Rev 4.4	0.005mg/L
Total Hardness	CALC (200.8)	0.500 mg/L
Total Nitrate (NO3) + Nitrite (NO2)	EPA 300.0	0.500 mg/L
<i>E. coli</i>	SM 9223B	1.0 MPN/100mL

Wheel Creek Chemical Monitoring Results

During this reporting period, Versar, Inc. collected four storm events at each of the three monitoring stations. Three samples were collected and composited at each station over the course of the storm hydrograph. Continuous flow was collected at each station during each storm event utilizing SIGMA area velocity probes or an ISCO bubbler flow meter. The instantaneous discharge, level, velocity, water temperature and pH were recorded at the time the samples were collected.

Storm Event Samples

March 11, 2015
April 14, 2015
May 21, 2015
June 3, 2015

During this reporting period, Harford County staff collected discrete baseflow samples at each station during six events.

Baseflow Samples

January 31, 2015
February 25, 2015
March 30, 2015
April 28, 2015
May 21, 2015
June 30, 2015

Wheel Creek - Continuous Flow Monitoring

US Geological Survey

Harford County contracted with the U.S. Geological Survey for Water Year 2015 to operate and maintain the continuous-record streamflow-gaging station on Wheel Creek, approximately 250 feet upstream of the confluence with Winters Run at Atkisson Reservoir and the precipitation gage located in Atkisson Reservoir, 0.7 miles upstream of the dam.

The gaging station collects stage data by use of a non-submersible pressure transducer system and is interfaced with a Data Collection Platform (DCP) to transmit the data in near real-time to

the USGS Maryland-Delaware-DC Water Science Center public webpage. The following items/products were produced by USGS from the operation of streamflow-gaging station:

- (1) A continuous record of gage heights (usually with 5-minute to 15-minute recording interval) made available to the public in near real-time,
- (2) A stage-discharge relation developed using conventional discharge measurements and corresponding gage heights,
- (3) A record of datum corrections and rating shifts,
- (4) A record of computed unit-value discharge data with mean daily flows and yearly flow statistics,
- (5) Documentation of data analysis, data-quality checks, final data review, and
- (6) Publication of computed daily discharge values in the USGS Annual Water-Data Report. Precipitation gage data is collecting using a tipping bucket rain gage. Data collected at the Wheel Creek gages are available in 'real-time' at <http://waterdata.usgs.gov/md/nwis/rt>.

MD Department of Natural Resources

DNR established and operated three stream level loggers at stations WC002, WC003, and WC004. Flow rate are estimated from five-minute level data and using a power-function rating curve. The rating curve was derived using a combination of physically measured flow rates at the station and hydraulic computations. DNR flow rate data will be used to supplement flow rate data used to calculate storm runoff pollutant event mean concentration (EMC) and loading calculations.

b. Biological Monitoring:

- i. Benthic macroinvertebrate samples shall be gathered each spring between the outfall and in-stream monitoring locations or other practical locations based on an approved study design; and
- ii. The County shall use the EPA Rapid Bioassessment Protocols (RBP), Maryland Biological Stream Survey (MBSS), or other similar method approved by MDE.

Wheel Creek Biological Monitoring Sites

Eight biological monitoring sites were established in 2009, seven stations in Wheel Creek and one station in a control watershed.

The monitoring sites stations were selected based on the location of stream restoration and stormwater retrofit projects proposed throughout the watershed. With the current monitoring design, we should be able to assess the benefits of individual projects on biological communities and assess the efficacy of individual restoration techniques. This should provide valuable data to guide the selection of restoration techniques in the future.

Wheel Creek Biological Monitoring Results

In April 2015, the Maryland Biological Stream Survey (MBSS), in support of Chesapeake and Atlantic Coastal Bays Trust Fund monitoring program, sampled the eight biological monitoring sites.

Sites were sampled for water chemistry, and presence of vernal pools, herpetofauna, and benthic macroinvertebrates in accordance with the *Maryland Biological Stream Survey Sampling Manual: Field Protocols (Stranko, et. al, 2010)*. Recording temperature loggers were also deployed at each site and were programmed to measure stream temperature every 20 minutes from June through August.

The Benthic Indices of Biotic Integrity (BIBI) is presented below.

MBSS SITE	SAMPLING DATE	BIBI	BIBI RATING
ATKI-003-X-2015	23-APR-2015	2.3	POOR
ATKI-004-X-2015	23-APR-2015	2.3	POOR
ATKI-006-X-2015	23-APR-2015	1.3	VERY POOR
ATKI-101-X-2015	23-APR-2015	2.7	POOR
ATKI-102-X-2015	23-APR-2015	2	POOR
ATKI-105-X-2015	23-APR-2015	2	POOR
ATKI-107-X-2015	23-APR-2015	2	POOR
LWIN-108-X-2015	23-APR-2015	2.3	POOR

c. Physical Monitoring:

- i. A geomorphologic stream assessment shall be conducted between the outfall and in-stream monitoring locations or in a reasonable area based on the approved study design. This assessment shall include an annual comparison of permanently monumented stream channel cross-sections and the stream profile;

Wheel Creek Geomorphologic Monitoring Sites

Four assessment reaches were established for geomorphic or physical monitoring based on the following treatments:

Station WC01

Within a proposed stream stabilization reach

Station WC02

Downstream of a stream stabilization reach and BMP retrofit location

Station WC03

Downstream of a BMP retrofit location only

Station WC04

Control site with no proposed restoration activities

Cross-sectional and longitudinal profile surveys are conducted to establish baseline conditions of channel geometry and slope, to which subsequent data can be compared in determining whether lateral or vertical migration of the channel is occurring.

Bank and bed pins are monitored to determine rates of potential bank and channel bed erosion or aggradations, while scour chains were used to quantify the extent of bed material scouring.

Pebble counts are conducted to assess substrate particle size distribution and track changes in channel roughness.

Geomorphic surveys following the completion of restoration projects will enable future comparisons to quantitatively evaluate changes in geomorphological conditions as a result of restoration efforts throughout the watershed. By comparing post-restoration conditions to the pre-restoration data, any benefits to the stream ecosystem resulting from restoration projects can potentially be quantified. With the current monitoring design, we may have the ability to assess the benefits of individual projects and assess the efficacy of individual restoration techniques. This could provide valuable data to help guide the selection of restoration techniques in the future.

Wheel Creek Geomorphologic Monitoring Results

During this reporting period, Versar, Inc. completed the geomorphologic or physical stream assessment in Wheel Creek including surveying the channel cross-sections, stream longitudinal profile, bank pins, scour chains and pebble counts .

The monitoring completed during this reporting period represents the fourth year of assessing the geomorphological conditions within the Wheel Creek watershed. Results show that bank erosion continues to be prevalent throughout the watershed and channel instability continues to be evident with changes in some channel cross sections and longitudinal profiles.

- ii. A stream habitat assessment shall be conducted using techniques defined by the EPA’s RBP, MBSS, or other similar method approved by MDE; and

Wheel Creek Habitat Monitoring Sites

Physical habitat assessments are conducted during the summer index sampling period utilizing MBSS protocols and Stream Habitat Assessment Data Sheets. Metric selection and data analysis will follow the guidance document *A Physical Habitat Index for Freshwater Wadeable Streams in Maryland, Final Report, (Paul, et al. 2002)*. Eight metrics are used to calculate the Physical Habitat Index (PHI) for the Piedmont ecoregion. These metrics include percent embeddedness, remoteness, percent shading, epifaunal substrate, instream habitat, instream woody debris and root wads, bank stability and riffle run quality.

Wheel Creek Habitat Monitoring Results

A physical habitat assessment was not completed during this reporting period, since it was outside the timeframe for sampling protocols.

iii. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HEC-RAS, HSPF, SWMM, etc.) in the fourth year of the permit to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.

d. Annual Data Submittal: The County shall describe in detail its monitoring activities for the previous year and include the following:

- i. EMCs submitted on MDE's long-term monitoring database as specified in PART V below;
- ii. Chemical, biological, and physical monitoring results and a combined analysis for the approved monitoring locations; and
- iii. Any requests and accompanying justifications for proposed modifications to the monitoring program.

Since this reporting period is only six months because of the transition from calendar year reporting to fiscal year reporting, the EMC and combined chemical, biological and physical analysis and EMCs for 2015 have not been completed. The data will be completed and submitted in the next annual report

Appendix F1 contains the concentration data for the baseflow and stormflow events, biological monitoring and physical monitoring results.

2. Stormwater Management Assessment

The County shall continue monitoring the Church Creek watershed, or select and submit for MDE's approval a new watershed restoration project for determining the effectiveness of stormwater management practices for stream channel protection. Physical stream monitoring protocols shall include:

- a. An annual stream profile and survey of permanently monumented cross sections in Church Creek to evaluate channel stability;
- b. A comparison of the annual stream profile and survey of the permanently monumented cross-sections with baseline conditions for assessing areas of aggradation and degradation; and
- c. A hydrologic and/or hydraulic model shall be used (e.g., TR-20, HEC-2, HEC-RAS, HSPF, SWMM, etc.) in the fourth year of the permit to analyze the effects of rainfall; discharge rates; stage; and, if necessary, continuous flow on channel geometry.

Church Creek Monitoring Site

In 2003, the Harford County MS4 Office and MDE selected the Church Creek watershed to provide monitoring for MDE's use to determine the effectiveness of their stormwater management program. Harford County does not utilize this monitoring for its MS4 program.

The 181 acre watershed includes commercial and residential development. The Wexford residential development, which comprises approximately 20% of the watershed, was developed using the 2000 Stormwater Design Manual standards. Approximately 40% of the watershed was developed prior to the implementation of the Design Manual. The Wexford development

is served by two extended detention facilities with micropools, one rain garden and two grassed swales. The stream reach, beginning just south of MD Route 7 and extending 2400 linear feet, is surveyed annually. Four permanently monumented cross sections are surveyed,

along with the stream profile, bankfull indicators, and water surface elevation. The stream is surveyed in the Fall of each year, following leaf-off.

Church Creek Monitoring Results

An assessment for the Church Creek watershed was not conducted during this reporting period, since it was outside the timeframe for sampling.

G. Program Funding

1. Annually, a fiscal analysis of the capital, operation, and maintenance expenditures necessary to comply with all conditions of this permit shall be submitted as required in PART V below.

This reporting period covered the last half of fiscal year 2015. The following is a summary of expenditures within the Harford County MS4 Office.:

FY2015 Expenditures - \$1.154 M

Capital - \$491,000

Maintenance - \$13,000

Operating -- \$650,000

The maintenance and capital expenditures represent purchase orders issued during the reporting period (Appendix G). An additional 23 purchase orders were active that were previously issued.

2. Adequate program funding to comply with all conditions of this permit shall be maintained. Lack of funding does not constitute a justification for noncompliance with the terms of this permit.

In May 2015, the County Council approved the fiscal year 2016 budget. The full budget document is available at the following link

<http://www.harfordcountymd.gov/ArchiveCenter/ViewFile/Item/980>

FY2016 Projected Revenue - \$642 M

Property Taxes - \$295 M

Income Taxes - \$203 M

Other Revenue \$144 M

In March 2015, the County Council passed a resolution to dedicate a portion of the County's recordation tax to the Watershed Protection and Restoration Fund (Appendix B). A portion of these dedicated funds will be used to pay the debt services for future bonds. The County Council approved the following capital budget for the implementation of this permit:

FY2016 Watershed Protection and Restoration Approved Capital Budget - \$9.25 M

Recordation Tax - \$0.2 M

Future Bonds - \$5.8 M

Proposed Grants - \$3 M

Nine (9) full time positions are funded within the Watershed Restoration Program for the implementation of this program including the following:

Staff Funded under the Watershed Protection and Restoration Program - \$1.0 M

MS4 Office - 3

Stormwater Plans Review and Inspections – 6

Erosion and Sediment Control Plans Review – 1

As discussed above under Permit Administration, staff from various other departments and division within the County assists the MS4 Office with the implementation of this permit (Appendix A).

As required under the Annotated Code Maryland, Section 4-202, on July 1, 2016 Harford County will submit a Financial Assurance Plan approved by the County Council.

PART V. PROGRAM REVIEW AND ANNUAL PROGRESS REPORTING

A. Annual Reporting

1. Annual progress reports, required under 40 CFR 122.42(c), will facilitate the long-term assessment of Harford County's NPDES stormwater program. The County shall submit annual reports on or before the anniversary date of this permit and post these reports on the County's website. All information, data, and analyses shall be based on the fiscal year and include:
 - a. The status of implementing the components of the stormwater management program that are established as permit conditions including:
 - i. Source Identification;
 - ii. Stormwater Management;
 - iii. Erosion and Sediment Control;
 - iv. Illicit Discharge Detection and Elimination;
 - v. Litter and Floatables;
 - vi. Property Management and Maintenance;
 - vii. Public Education;
 - viii. Watershed Assessment;
 - ix. Restoration Plans;
 - x. TMDL Compliance;
 - xi. Assessment of Controls; and
 - xii. Program Funding.
 - b. A narrative summary describing the results and analyses of data, including monitoring data that is accumulated throughout the reporting year;

- c. Expenditures for the reporting period and the proposed budget for the upcoming year;
 - d. A summary describing the number and nature of enforcement actions, inspections, and public education programs;
 - e. The identification of water quality improvements and documentation of attainment and/or progress toward attainment of benchmarks and applicable WLAs developed under EPA approved TMDLs; and
 - f. The identification of any proposed changes to the County's program when WLAs are not being met.
2. To enable MDE to evaluate the effectiveness of permit requirements, the following information shall be submitted in a format consistent with Attachment A:
- a. Storm drain system mapping (PART IV.C.1);
 - b. Urban BMP locations (PART IV.C.3);
 - c. Impervious surfaces (PART IV.C.4);
 - d. Water quality improvement project locations (PART IV.C.6);
 - e. Monitoring site locations (PART IV.C.5);
 - f. Chemical monitoring results (PART IV.F.1);
 - g. Pollutant load reductions (PART IV.E.4 and IV.F.1);
 - h. Biological and habitat monitoring (PART IV. F.1);
 - i. Illicit discharge detection and elimination activities (PART IV.D.3);
 - j. Erosion and sediment control and stormwater program information (PART IV.D.1 and IV.D.2);
 - k. Grading permit information - quarterly (PART IV. D.2); and

I. Fiscal analyses - cost for NPDES related implementation (PART IV. G).

3. Because this permit uses an iterative approach to implementation, the County must evaluate the effectiveness of its programs in each annual report. BMP and program modifications shall be made within 12 months if the County's annual report does not demonstrate compliance with this permit and show progress toward meeting WLAs developed under EPA approved TMDLs.

B. Program Review

In order to assess the effectiveness of the County's NPDES program for eliminating non-stormwater discharges through the illicit connection program and reducing the discharge of pollutants to protect water quality, MDE will review program implementation, annual reports, and periodic data submittal. Procedures for the review of local erosion and sediment control and stormwater management programs exist in Maryland's sediment control and stormwater management laws. Additional evaluations may be conducted at MDE's discretion to determine compliance with permit conditions.

C. Reapplication for NPDES Stormwater Discharge Permit

This permit is effective for no more than five years, unless administratively continued by MDE. Continuation or reissuance of this permit beyond this permit term will require the County to reapply for NPDES stormwater discharge permit coverage in its fourth year annual report. Failure to reapply for coverage constitutes a violation of this permit.

As part of this application process, Harford County shall submit to MDE an executive summary of its NPDES stormwater management program that specifically describes how the County is meeting the overall goal to ensure that each County watershed has been thoroughly evaluated and its progress in implementing water quality improvements. This application shall be used to gauge the effectiveness of the County's NPDES stormwater program and will provide guidance for developing future permit conditions. At a minimum, the application summary shall include:

1. Harford County's NPDES stormwater program goals;
2. Program summaries for the permit term regarding:
 - a. Illicit discharge detection and elimination results;
 - b. Restoration plan status including County totals for impervious acres, impervious acres controlled by stormwater management, the current status of water quality improvement projects and acres managed, and documentation of progress toward meeting stormwater WLAs developed under EPA approved TMDLs;
 - c. Pollutant load reductions as a result of this permit and an evaluation of whether TMDLs are being achieved;
 - d. Impervious acres compared to the baseline and twenty percent restoration requirement in PART IV.E.2.a.; and
 - e. Other relevant data and information for describing County programs;
3. Program operation and capital improvement costs for the permit term; and
4. Descriptions of any proposed permit condition changes based on analyses of the successes and failures of the County's efforts to comply with the conditions of this permit.

PART VI. SPECIAL PROGRAMMATIC CONDITIONS

A. Chesapeake Bay Restoration by 2025

A Chesapeake Bay TMDL has been developed by the EPA for the six Bay States (Delaware, Maryland, New York, Pennsylvania, Virginia, and West Virginia) and the District of Columbia. The TMDL describes the level of effort that will be necessary for meeting water quality criteria and restoring Chesapeake Bay. This permit is requiring compliance with the Chesapeake Bay TMDL through the use of a strategy that calls for the restoration of twenty percent of previously developed impervious land with little or no controls within this five year permit term as described in Maryland's Watershed Implementation Plan. The TMDL is an aggregate of nonpoint sources or the load allocation (LA), and point sources or WLA, and a margin of safety. The State is required to issue NPDES permits to point source discharges that are consistent with the assumptions of any applicable TMDL, including those approved subsequent to permit issuance.

Urban stormwater is defined in the CWA as a point source discharge and will subsequently be a part of Maryland's WLA. The NPDES stormwater permits can play a significant role in regulating pollutants from Maryland's urban sector and in the development of Chesapeake Bay Watershed Implementation Plans. Therefore, Maryland's NPDES stormwater permits issued to Harford County and other municipalities will require coordination with MDE's Watershed Implementation Plan and be used as the regulatory backbone for controlling urban pollutants toward meeting the Chesapeake Bay TMDL by 2025.

B. Comprehensive Planning

Harford County shall cooperate with other agencies during the completion of the Water Resources Element (WRE) as required by the Maryland Economic Growth, Resource Protection and Planning Act of 1992 (Article 66B, Annotated Code of Maryland). Such cooperation shall entail all reasonable actions authorized by law and shall not be restricted by the responsibilities attributed to other entities by separate State statute, including but not limited to reviewing and approving plans and appropriating funds.

PART VII. ENFORCEMENT AND PENALTIES

A. Discharge Prohibitions and Receiving Water Limitations

Harford County shall prohibit non-stormwater discharges through its MS4. NPDES permitted non-stormwater discharges are exempt from this prohibition. Discharges from the following will not be considered a source of pollutants when properly managed: water line flushing; landscape irrigation; diverted stream flows; rising ground waters; uncontaminated ground water infiltration to separate storm sewers; uncontaminated pumped ground water; discharges from potable water sources; foundation drains; air conditioning condensation; irrigation waters; springs; footing drains; lawn watering; individual residential car washing; flows from riparian habitats and wetlands; de-chlorinated swimming pool discharges (not including filter backwash); street wash water; and firefighting activities.

Consistent with §402(p)(3)(B)(iii) of the CWA, the County shall take all reasonable steps to minimize or prevent the contamination or other alteration of the physical, chemical, or biological properties of any waters of the State, including a change in temperature, taste, color, turbidity, or odor of the waters or the discharge or deposit of any organic matter, harmful organism, or liquid, gaseous, solid, radioactive, or other substance into any waters of the State, that will render the waters harmful to:

1. Public health, safety, or welfare;
2. Domestic, commercial, industrial, agricultural, recreational, or other legitimate beneficial use;
3. Livestock, wild animals, or birds; and
4. Fish or other aquatic life.

B. Duty to Mitigate

Harford County shall take all reasonable steps to minimize or prevent any discharge in violation of this permit that has a reasonable likelihood of adversely affecting human health or the environment.

C. Duty to Comply

Harford County shall be responsible for complying with all conditions of this permit. Other entities may be used to meet various permit obligations provided that both the County and the other entity agree contractually. Regardless of any arrangement entered into however, the County remains responsible for permit compliance. In no case may this responsibility or permit compliance liability be transferred to another entity.

Failure to comply with a permit provision constitutes a violation of the CWA and is grounds for enforcement action; permit termination, revocation, or modification; or denial of a permit renewal application. The County shall comply at all times with the provisions of the Environment Article, Title 4, Subtitles 1, 2, and 4; Title 7, Subtitle 2; and Title 9, Subtitle 3 of the Annotated Code of Maryland.

The County shall at all times properly operate and maintain all facilities and systems of treatment and control (and related appurtenances) that are installed or used by the County to achieve compliance with the conditions of this permit. Proper operation and maintenance also includes adequate laboratory controls and appropriate quality assurance procedures. This provision requires the operation of back-up or auxiliary facilities or similar systems that are installed by the County only when the operation is necessary to achieve compliance with the conditions of the permit.

D. Sanctions

1. Penalties Under the CWA - Civil and Criminal

Section 309(d) of the CWA, 33 USC §1319(d) provides that any person who violates any permit condition is subject to a civil penalty not to exceed \$25,000 per day for each violation. Pursuant to the Civil Monetary Penalty Inflation Adjustment Rule, 40 CFR Part 19, any person who violates any NPDES permit condition or limitation after December 6, 2013, is liable for an administrative penalty not to exceed \$37,500 per day for each such violation. Section 309(g)(2) of the CWA, 33 USC §1319(g)(2) provides that any person who violates any permit condition is subject to an administrative penalty not to exceed \$10,000 per day for each violation, not to exceed \$125,000.

Pursuant to the Civil Monetary Penalty Inflation Adjustment Rule, 40 CFR Part 19, any person who violates any NPDES permit condition or limitation after December 6, 2013, is liable for an administrative penalty not to exceed \$16,000 per day for each such violation, up to a total penalty of \$187,500. Pursuant to Section 309(c) of the CWA, 33 USC §1319(c), any person who negligently violates any permit condition is subject to criminal penalties of \$2,500 to \$25,000 per day of violation, or imprisonment of not more than one year, or both. If a person has been convicted of negligent violations of the CWA previously, the criminal penalties may be increased to \$50,000 per day of violation, or imprisonment of not more than two years, or both. Any person who knowingly violates any permit condition is subject to criminal penalties of \$5,000 to \$50,000 per day of violation, or imprisonment for not more than three years, or both. If a person has been convicted of knowing violations of the CWA previously, the criminal penalties may be increased to \$100,000 per day of violation, or imprisonment of not more than six years, or both.

2. Penalties Under the State's Environment Article - Civil and Criminal

Nothing in this permit shall be construed to preclude the institution of any legal action or relieve the County from civil or criminal responsibilities and/or penalties for a violation of Title 4, Title 7, and Title 9 of the Environment Article, Annotated Code of Maryland, or any federal, local, or other State law or regulation. Section 9-342 of the Environment Article provides that a person who violates any condition of this permit is liable to a civil penalty of up to \$10,000 per violation, to be collected in a civil action brought by MDE, and with each day a violation continues being a separate violation. Section 9-342 further authorizes the MDE to impose upon any person who violates a permit condition, administrative civil penalties of up to \$10,000 per violation, up to \$100,000.

Section 9-343 of the Environment Article provides that any person who violates a permit condition is subject to a criminal penalty not exceeding \$25,000 or imprisonment not exceeding one year, or both for a first offense. For a second offense, Section 9-343 provides for a fine not exceeding \$50,000 and up to two years imprisonment.

The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who tampers with, or knowingly renders inaccurate any monitoring device or method required to be maintained under this permit shall, upon conviction, be punished

by a fine of not more than \$50,000 per violation, or by imprisonment for not more than two years per violation, or both.

The Environment Article, §9-343, Annotated Code of Maryland, provides that any person who knowingly makes any false statement, representation, or certification in any records or other document submitted or required to be maintained under this permit, including monitoring reports or reports of compliance or noncompliance shall, upon conviction, be punished by a fine of not more than \$50,000 per violation, or by imprisonment for not more than two years per violation, or both.

E. Permit Revocation and Modification

1. Permit Actions

This permit may be modified, revoked and reissued, or terminated for cause. The filing of a request by the County for a permit modification or a notification of planned changes or anticipated noncompliance does not stay any permit condition. A permit may be modified by MDE upon written request by the County and after notice and opportunity for a public hearing in accordance with and for the reasons set forth in COMAR 26.08.04.10.

After notice and opportunity for a hearing and in accordance with COMAR 26.08.04.10, MDE may modify, suspend, or revoke and reissue this permit in whole or in part during its term for causes including, but not limited to the following:

- a. Violation of any terms or conditions of this permit;
- b. Obtaining this permit by misrepresentation or failure to disclose fully all relevant facts;
- c. A change in any condition that requires either a temporary reduction or elimination of the authorized discharge;
- d. A determination that the permitted discharge poses a threat to human health or welfare or to the environment and can only be regulated to acceptable levels by permit modification or termination;

- e. To incorporate additional controls that are necessary to ensure that the permit effluent limit requirements are consistent with any applicable TMDL WLA allocated to the discharge of pollutants from the MS4; or
- f. As specified in 40 CFR §§122.62, 122.63, 122.64, and 124.5.

2. Duty to Provide Information

The County shall furnish to MDE, within a reasonable time, any information that MDE may request to determine whether cause exists for modifying, revoking and reissuing, or terminating this permit; or to determine compliance with this permit. The County shall also furnish to MDE, upon request, copies of records required to be kept by this permit.

F. Inspection and Entry

Harford County shall allow an authorized representative of the State or EPA, upon the presentation of credentials and other documents as may be required by law, to:

- 1. Enter the permittee's premises where a regulatory activity is located or conducted or where records must be kept under the conditions of this permit;
- 2. Have access to and obtain copies at reasonable times of any records that must be kept under the conditions of this permit.
- 3. Inspect at reasonable times, without prior notice, any construction site, facility, equipment (including monitoring and control equipment), practices or operations regulated or required under this permit: and
- 4. Sample or monitor at reasonable times, for the purposes of assuring permit compliance or as otherwise authorized by the CWA, any substances or parameters at any location.

G. Monitoring and Record Keeping

Unless otherwise specified by this permit, all monitoring and records of monitoring shall be in accordance of 40 CFR Part 122.41(j).

H. Property Rights

The issuance of this permit does not convey any property rights in either real or personal property, or any exclusive privileges nor does it authorize any injury to private property or an invasion of personal rights, nor any infringement of federal, State, or local law or regulations.

I. Severability

The provisions of this permit are severable. If any provision of this permit shall be held invalid for any reason, the remaining provisions shall remain in full force and effect. If the application of any provisions of this permit to any circumstance is held invalid, the application to other circumstances shall not be affected.

J. Signature of Authorized Administrator and Jurisdiction

Each application, report or other information required under this permit to be submitted to MDE shall be assigned as required by COMAR 26.08.04.01-1. Signatories shall be principal executive officer, ranking elected official, or other duly authorized employee.